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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,766	09/17/2003	Tadashi Sasaki	P/1250-259	7983
2352 7590 02/08/2007 OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			EXAMINER ARANCIBIA, MAUREEN GRAMAGLIA	
			ART UNIT	PAPER NUMBER
			1763	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/666,766

Applicant(s)

SASAKI ET AL.

Examiner

Maureen G. Arancibia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 November 2006 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 21-26, 28, 29, and 34-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,009,890 to Kaneko et al. in view of U.S. Patent Application Publication 2002/0051644 to Sugimoto et al. and U.S. Patent 6,079,693 to Ettinger et al.**

In regards to Claims 21-23 and 36-38, Kaneko et al. teaches a substrate processing apparatus (Figure 25) comprising: a process section 3 housing a process chamber 51 for removing organic matter from a substrate W with a removal liquid (Figure 16; Column 11, Lines 63-65); a holding element 70 to hold a substrate in said

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process chamber (Figures 15 and 16); a removal liquid supply element 80 to supply removal liquid to the substrate held by the holding element (Figure 16; Column 12, Lines 30-32); an indexer section 2 including an indexer mechanism 8 to directly load and unload the substrate within a carrier 1 into and out of the indexer section with respect to another carrier 1 set at a predetermined position, as broadly recited in the claim (Figure 25; Column 9, Lines 7-33); a relay section (housing) 4 disposed between the indexer section 2 and the process section 3, and including a transfer mechanism 14, 30, 40 to transfer substrates between the indexer section and the process section (Figure 25; Column 9, Line 65 - Column 10, Line 13). Kaneko et al. teaches a plurality of gate sections 101, 103 including shutters that open and close the gate section to allow for passage of a substrate (Figure 25; Column 16, Lines 8-12) disposed in a plurality of locations along a transport path for a substrate that extends from the indexer section 2 to the process section 3, wherein one of the shuttered gate sections 101 is located between the indexer section 2 and the relay section (housing) 4 and another of the shuttered gate sections 103 is located between the relay section (housing) 4 and the process section 3 (Figure 25).

In regards to Claim 21, Kaneko et al. teaches that process chamber 51 has an opening on its upper side (Figure 16).

Kaneko et al. does not expressly teach that the indexer section includes an indexer mechanism to directly load and unload the substrate to be processed into and out of a carrier set at a predetermined position.

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Sugimoto et al. teaches a substrate processing apparatus configured to process individual wafers (Figure 6) rather than a full cassette of wafers at a time, said apparatus comprising an indexer section 4 including an indexer mechanism 6 to directly load and unload a wafer W to be processed into and out of a carrier 7 set a predetermined position. (Figure 1; Paragraphs 43-44)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Kaneko et al. to be configured to process individual wafers rather to batch-process full cassettes of wafers at a time, and to include an indexer mechanism to directly load and unload a wafer to be processed into and out of a carrier set at a predetermined position, as taught by Sugimoto et al. The motivation for configuring the apparatus to process individual wafers rather to batch-process full cassettes of wafers at a time, as would have been obvious to one of ordinary skill in the art at the time of the invention, would have been to gain the advantages of individualized processing, such as for lower-throughput applications or to allow individual process settings for individual wafers, and, as taught by Sugimoto et al. (Paragraphs 43-44 and 52-60; Figures 3 and 4), to allow for the use of single-wafer processing tools, such as a spin cleaning unit or a brush cleaning unit, that allow for the effective removal of a reaction product (Paragraphs 13-18). The motivation for including the indexer mechanism of Sugimoto et al. would have been to allow the wafers to be loaded and unloaded from the carriers before and after processing. (Paragraphs 43-44)

Kaneko et al. does not expressly teach that a shuttered gate section allowing for passage of a substrate is provided in the opening disposed in the process chamber 51.

Sugimoto et al. teaches that a shuttered gate section allowing for passage of a substrate W is provided in an opening disposed in a process chamber 1165 configured for an organic matter removal process. (Figures 9 and 13; Paragraphs 13, 121, 122, and 186-188)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Kaneko et al. to include a shuttered gate section allowing for passage of a substrate in the opening of the process chamber, as taught by Sugimoto et al. The motivation for making such a modification, as taught by Sugimoto et al. (Paragraph 188), would have been to assure the air tightness of the process chamber.

Further in regards to Claims 21-23, the combination of Kaneko et al. and Sugimoto et al. does not expressly teach that the shutters in the shuttered gate sections are made of a light-blocking material to allow them to block light. In regards to Claims 24 and 39, the combination of Kaneko et al. and Sugimoto et al. does not expressly teach a cover section to cover an edge part of a shutter in its closed position is disposed in an edge part of any of the shuttered gate sections.

Ettinger et al. teaches that the plates 36A, 36B of a shutter (Figure 2) should be made of aluminum or stainless steel. (Column 8, Lines 26-30) Ettinger et al. also teaches that a cover section (sealing faces 122A, 122B) to cover an edge part of the shutter in its closed position is disposed in the edge part of the shuttered gate section. (Figures 2 and 5)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Kaneko et al. and Sugimoto et al. to form all of the shutters of

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aluminum or stainless steel, as taught by Ettinger et al. The motivation for making such a modification, as taught by Ettinger et al. (Column 8, Lines 26-30), would have been to form the shutters of exemplary chemical-resistant material. It would also have been obvious to provide a cover section to cover an edge part of each shutter in its closed position, as taught by Ettinger et al. The motivation for making such a modification, as taught by Ettinger et al. (Column 7, Line 51 - Column 10), would have been to engage the shutter with the cover section (valve seating faces) so as to effectively prevent fluid flow through the gate section.

The solid metal shutters taught by the combination of Kaneko et al., Sugimoto et al., and Ettinger et al. would be inherently structurally capable of blocking light from passing through each shuttered gate section (at the opening of the process chamber, between the process section and the relay section, and between the relay section and the indexer section) when the shutters were in a closed position. *Note in regards to Applicant's argument to the contrary, that the shutters between the process section and relay section and between the relay section and the indexer section, as part of the relay section housing, would perform light blocking for the inside of the relay section housing, as broadly recited in Claim 22.* This rejection is based on the fact the apparatus structure taught above has the inherent structural capability of being used in the manner intended by the Applicant. When a rejection is based on inherency, a rejection under 35 U.S.C. 102 or U.S.C. 103 is appropriate. (See *In re Fitzgerald* 205 USPQ 594 or MPEP 2112).

In regards to Claims 25 and 40, the shutters 101 and 103 taught by Kaneko et al. are arranged parallel to each other (Figure 25). The shutter included in upper-side opening of process chamber 51 as taught by the combination of Kaneko et al. and Sugimoto et al. would be arranged orthogonally relative to the shutters 101, 103, as broadly recited in the claims.

In regards to Claim 26, Kaneko et al. teaches that a clearance between shutter 101 and shutter 103 is greater than the size of a substrate in the direction of transport of said substrate (Figure 25).

In regards to Claim 28, Kaneko et al. teaches that process section 3 comprises: a first process chamber 51, a second process chamber 52 directed to a process different from the organic matter removal process (Column 11, Lines 63-67); and a substrate transport mechanism 56 to transport a substrate between the first and second process chambers 51, 52 (Figure 25; Column 12, Lines 3-8 and Column 15, Lines 2-4)

In regards to Claim 29, Kaneko et al. teaches that the shutters 101, 103 should be controlled such that all of the shutters do not open concurrently; i.e. that only one should be open at a time. (Column 16, Lines 3-26)

In regards to Claims 34 and 35, it has been held that inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims. *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). The apparatus taught by the combination of Kaneko et al., Sugimoto et al., and Ettinger et al. would be structurally capable of performing the intended use of removing an organic polymer caused by the

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transformation of a resist and formed by performing dry etching of a thin film on the substrate with use of the resist as a mask.

4. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. in view of Sugimoto et al. and Ettinger et al. as applied to Claim 21 above, and further in view of U.S. Patent 6,663,148 to Bonora et al.

The teachings of Kaneko et al., Sugimoto et al., and Ettinger et al. were discussed above.

The combination of Kaneko et al., Sugimoto et al., and Ettinger et al. does not expressly teach that a carrier 1 can be a FOUP cassette allowing at least partially for the transmission of light.

Bonora et al. teaches that a wafer carrier can be a FOUP cassette (Column 1, Lines 62-67) allowing at least partially for the transmission of light (via a transparent window in the FOUP door cover; Column 7, Lines 45-66).

It would have been obvious to one of ordinary skill in the art to modify the combination of Kaneko et al., Sugimoto et al., and Ettinger et al. to have a wafer carrier be a FOUP cassette allowing at least partially for the transmission of light. The motivation for having a wafer carrier be a FOUP cassette, as taught by Bonora et al. (Column 1, Lines 62-67), would have been to provide a sealed, ultra-clean interior environment in which wafers may be stored and transferred. The motivation for having the cassette allow at least partially for the transmission of light, such as via a transparent window in the FOUP door cover, as taught by Bonora et al. (Column 7, Lines 45-66), would have been to allow an optical sensor to detect, via a light beam

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transmitted through the transparent section of the FOUP door cover, whether the FOUP door cover is oriented right-side-up or up-side-down.

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. in view of Sugimoto et al. and Ettinger et al. as applied to Claim 21 above, and further in view of U.S. Patent 6,403,925 to Johnsgard et al.

The teachings of Kaneko et al., Sugimoto et al., and Ettinger et al. were discussed above.

The combination of Kaneko et al., Sugimoto et al., and Ettinger et al. does not expressly teach a viewing window for viewing the inside of the process chamber.

Johnsgard et al. teaches a viewing window 505 in chamber wall 502. (Figure 5)

It would have been obvious to one of ordinary skill in the art to modify the combination of Kaneko et al., Sugimoto et al., and Ettinger et al. to provide a viewing window in the process chamber. The motivation for doing so, as taught by Johnsgard et al. (Column 9, Lines 59-65), would have been to allow the substrate to be processed to be viewed *in situ*.

6. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. in view of Sugimoto et al. and Ettinger et al., and further in view of Johnsgard et al. as applied to Claim 30 above, and further in view of U.S. Patent 6,866,745 to Kim.

The teachings of Kaneko et al., Sugimoto et al., Ettinger et al., and Johnsgard et al. were discussed above.

In regards to Claims 31 and 32, the combination of Kaneko et al., Sugimoto et al., Ettinger et al., and Johnsgard et al. discussed above does not expressly teach an illumination element or a window-open prohibiting element.

Kim teaches that an illumination element 230 can be provided in a chamber with a viewing window (in chamber wall hollow 206a), as broadly recited in Claim 16. (Figure 3A)

Johnsgard et al. teaches that the viewing window 505 can be provided with a window-open prohibiting element (*a nontransmissive plate*; Column 9, Lines 65-67).

It would have been obvious to one of ordinary skill in the art to modify the combination of Kaneko et al., Sugimoto et al., Ettinger et al., and Johnsgard et al., to include an illumination element and a window-open prohibiting element. The motivation for including an illumination element, as taught by Kim (Column 8, Lines 4-5), would have been to light up the inside of the chamber. The motivation for including a window-open prohibiting element, as taught by Johnsgard et al. (Column 9, Lines 65-67), would have been to allow the window to be covered for improved insulation.

The illumination element taught by the combination of Kaneko et al., Sugimoto et al., Ettinger et al., Johnsgard et al., and Kim would be inherently capable of being switched on when the window was open and off when the window was closed, simply by turning the light on and off. Likewise, the window-open prohibiting element would be inherently capable of prohibiting the opening of the window during processing, simply by being in its closed position. This rejection is based on the fact the apparatus structure taught above has the inherent structural capability of being used in the manner intended

by the Applicant. When a rejection is based on inherency, a rejection under 35 U.S.C. 102 or U.S.C. 103 is appropriate. (See *In re Fitzgerald* 205 USPQ 594 or MPEP 2112).

Further in regards to Claims 31 and 32, the combination of Kaneko et al., Sugimoto et al., Ettinger et al., Johnsgard et al., and Kim does not expressly teach a controller for activating the illumination element to produce illumination when the viewing window is open and deactivating the illumination element to produce no illumination when the viewing window is closed, and for controlling the window-open prohibiting element such that it prohibits the opening of the viewing window at least during a period of time in which the substrate is processed with the removal liquid.

Sugimoto et al. additional teaches a control unit 80, including a ROM 81, a RAM 82, and a CPU 83 for controlling the operation of a substrate processing apparatus via an interface 84. (Paragraph 65)

It would have been obvious to one of ordinary skill in the art to further modify the apparatus taught by the combination of Kaneko et al., Sugimoto et al., Ettinger et al., Johnsgard et al., and Kim to include the control unit of Sugimoto et al., in order to store and execute an operation program for controlling the substrate processing apparatus, as taught by Sugimoto et al.

The control unit taught by the combination of Kaneko et al., Sugimoto et al., Ettinger et al., Johnsgard et al., and Kim just discussed would be structurally capable of performing the *intended uses recited in Claims 31 and 32* of activating the illumination element to produce illumination when the viewing window is open and deactivating the illumination element to produce no illumination when the viewing window is closed, and

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controlling the window-open prohibiting element such that it prohibits the opening of the viewing window at least during a period of time in which the substrate is processed with the removal liquid, by loading an appropriate operation program to the ROM and then executing it. It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Also, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

In regards to Claim 33, Kaneko et al. teaches that the supply of liquid to the removal liquid supply element 80 is controlled by a valve 87. (Figure 16; Column 12, Lines 43-45) The control unit taught by the combination of Kaneko et al., Sugimoto et al., Ettinger et al., Johnsgard et al., and Kim would be structurally capable of performing the *intended use recited in Claim 33* of controlling the valve to prohibit supply of the removal liquid at least during a period of time that the viewing window was open. It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Also, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the

structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

Response to Arguments

7. Applicant's arguments filed 15 September 2006 and 15 November 2006 have been fully considered but, to the extent to which they still apply, they are not persuasive.

In response to applicant's arguments against the references individually, specifically against the teachings of Kaneko et al., one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant's remaining arguments with respect to the newly added claim limitations have been considered but are moot in view of the new ground(s) of rejection set forth above.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571) 272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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